

# A REVIEW OF TUBERCULOSIS INFECTION IN MALE AND FEMALE POPULATION OF DISTRICT MEERUT

**Dr Neeraj Kumar**

Associate Professor, Department of Zoology  
Vardhaman College Bijnor, (Affiliated to MJPRU Bareilly) Uttar Pradesh, India

## ABSTRACT

TB kills more women in India than any other infectious disease and all cause of maternal mortality combined women with tuberculosis are often severely stigmatized. Recent studies in India suggest that more than 1, 00,000 women are rejected from their families each year on account of TB. Recent studies also suggest that every year in India more than 3, 00,000 children leave school on account of TB in their parents (Key facts and concepts, 2000). Since the tuberculosis is dreadful disease and affects all human activity, the epidemiological survey of any disease is essential for prevention of epidemics of any disease in a particular area. The survey of literature reveals that this type of survey has not been conducted in district Meerut. If at all it is made, performed by district hospitals by untrained peoples that too with different objective. Thus, the present study was carried out with the aim to make a general survey of tuberculosis unit identified by TB control department with special reference – To Know the Sex-wise rate of TB infection in Meerut.

**Keywords:** Tuberculosis, Epidemiology, *Mycobacterium tuberculosis*, Tubercles.

## Introduction

Tuberculosis is an infectious disease commonly known as TB caused by *Mycobacterium tuberculosis* and *Mycobacterium bovis*. TB kills more adults than any other infectious disease. Because it affect adults, tuberculosis causes enormous, social and economic disruption. In 17<sup>th</sup> century England, John Bunyan referred to consumption, now recognized as one of form of pulmonary tuberculosis, as “The caption of all these men death”. According to conservative estimates, there are 15-20 million cases of pulmonary tuberculosis in the world. This infectious disease pool is maintained by the occurrence of 4-5 million new cases and 3 million deaths each year (WHO Jan, 1982). In India, pulmonary tuberculosis is biggest public health problem. It has been estimated that nearly 5,00,000 people die due to this disease every year (Perk and Perk, 1989). The resistance is also lowered by certain disease, notably silicosis and diabetes mellitus, and by gastrectomy and corticosteroid therapy (Kissane, 1985). *Mycobacterium tuberculosis* was first isolated by Robert Koch in 1882. Robert Koch also proved that it is responsible for tuberculosis. This bacteria is micro aerophilic, non motile, non-spore forming, Gram negative, high in lipid material and acid fast (Barksdale and Kim, 1977). This disease is one of the major public health problems in the developing countries. No any other disease has so much sociological, economical and health problems on human population. It appears that the prevalence of TB is an index of the stage of social organization and standard of living of the community. It has decline in most of the developing countries almost to the stage of control. High growth in population and decline in living standard and nutritional status, promotes and provides a suitable environment for growth of tuberculosis bacterium. The greatest burden of tuberculosis incidence morality in developing countries is in adults (15-60 years). These includes the most productive member of the society such as parents, workers and community leaders, while there have been a tremendous decrease in tuberculosis cases in developing countries in last 40 years (Murray et al., 1990).

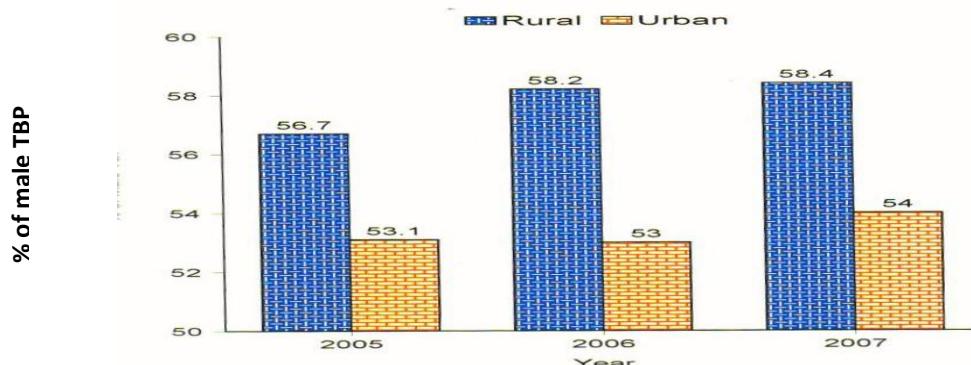
## Historical Review

The ancient name “tuberculosis” originated from the nodules called “tubercles” found in several hundreds painstaking post-mortem examination performed by Lanneac and his friend Gaspard Bayle (early 19<sup>th</sup> century) on cases died of disease. No any other infectious disease in the world, since time immemorial, has inflicted on mankind the misery and suffering in all aspect of human life viz., social, economic and health, as tuberculosis. The history of tuberculosis highlights man’s struggle against a disease that dates from antiquity and is the story of failures and success of disaster and hope. Tuberculosis is referred to as “rogaraj” or the king of diseases and as “rajayakshma” or the disease of the kings in ancient Indian Vedas (2000 BC). The disease also called captain of all these men of death by John Bunyan. If described in ancient Chinese Literature of a condition as leaping is consistent with tuberculosis. In regarding the epidemiology of TB a large number of workers contributed regarding knowledge and control of TB in Rural and Urdan area of our country such as Mathur et al., (1964), Goyal et al., (1978), Murray et al., (1990), Agnihotri et al., (1991), Balasangameshwara et al., (1993), Chakrabarty (1993), Frieden (1994), Chadha et al., (1995), Enarson et al., (1996), Gopi (1997), Rajeshwari et al., (1999), Kumari et al., (2000), Hira (2000), WHO (2000), Chopra (2001), Bedi and Bedi (2001), Gupta (2001), Agarwal (2001), Bashar (2001), Anuradha (2001) Munni (2002), Narain (2002), Swaminathan (2002), Tripathi (2002), Walia (2002), Trivedi (2002), RNTCP Status Report (2006), Anuradha et al., (2006), Modi-Prakash et al., (2006), Rajeswari et al., (2006) and Sbramani et al., (2007).

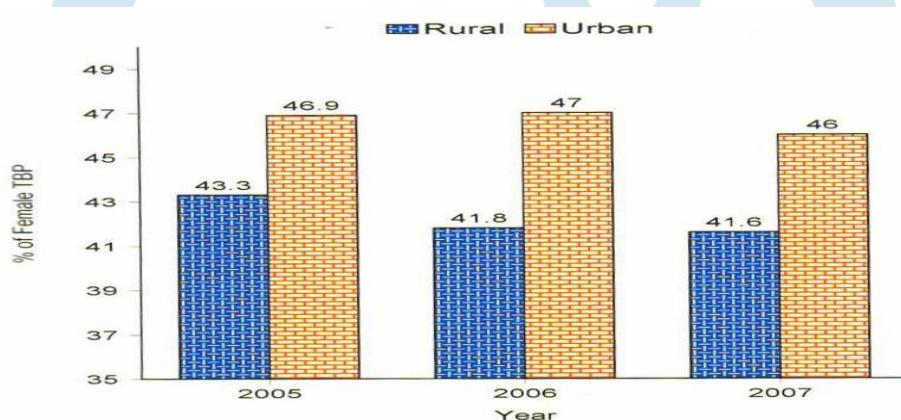
## Observation

During the course of study which was performed during January 2005-December 2007. In one rural population namely Tuberculosis Unit (TU) Bhawanpur and one urban population TU District Tuberculosis Centre Meerut were selected. Populations covered by these units are 4.96 and 8.95 lacs respectively.

The sex-wise ratio of TB infection data recorded for both these area given in table 1 and 2 respectively. In rural area out of total, percentage of TB patients is 0.43%; 58% of male and 42.0% of female TB patient were found .whereas in urban area, there were 0.77% of the total TB patients; 53.7% of male and 46.3% of female TB patient were found. In both rural and urban areas, males are more prone to infection as compared to female. However, increasing tendency of infection is noticed in both male and female but rural population the variation is very little in 2006 and 2007 (Fig. 1 and fig. 2).



**Fig. 01** Histogram showing trend of infection of TB in Male in Rural and Urban Population during 2005-2007



**Fig. 02** Histogram showing trend of infection of TB in Female in Rural and Urban Population during 2005-2007

## Materials and Methods

In western UP, Meerut is situated centrally and has a crowd population. Total population of district Meerut is 34.30lac. Presently, government of India provides all the facilities for controlling this dreadful disease by the financial help extended by WHO. In developing countries including India, the fight against TB can be successfully carried out only within the setting of a National Tuberculosis Program. This program is a part of countries General Health Service. The implementation of RNTCP (Revised National Tuberculosis Control Program), in the year 2000 in Meerut, is a modified program of NTCP (National Tuberculosis Control Program), which has been implicated in India since 1963. RNTCP is also popular as another name DOTs (directly observed treatment short course chemotherapy) because the patient takes every dose of anti tuberculosis drug by direct observation of health worker or any trained person. For the control of TB, Meerut is divided into six Tuberculosis units on the basis of population. Each tuberculosis unit is situated in government or NGO hospitals. Tuberculosis unit is also divided into microscopic center. During the course of study, investigator developed collaboration with Tuberculosis Unit District Tuberculosis Centre, Meerut, for urban area and tuberculosis unit Bhawanpur for rural area.

**TU Bhawanpur - (Rural TU)-** This TU is situated 12 kilometers away from Meerut and population is 4.96 lakh. The population is living in approximately 167 small villages. One third of this population move towards Meerut city for daily for employment, and rest or agriculture workers.

**TU-DTC Meerut - (Urban T U)-** This TU is situated at the centre of city in the district hospital (Pyarelal Sharma district hospital Meerut ),covered population is 8.95lacs. This TU covered approximately complete city. Most of the population of city is engaged in small industry, office workers and educational institutions and lives in very dingy and congested area. Detailed present or past history of TB patient was reported on a separate Performa regarding patient General information with the help of hospital record like age of patient.

**Table 01 :** Showing Sex-wise rate of TB Infection in Rural Population at Tuberculosis Unit (TU) Bhawanpur during 2005-2007

Year	Male TBP		Female TBP		Total TBP		Total Population (in lacs)
	No.	%	No.	%	No.	%	
2005	344	56.7	263	43.3	607	0.12	4.96
2006	453	58.2	325	41.8	778	0.16	4.96
2007	455	58.4	317	41.6	772	0.15	4.96
<b>Total</b>	<b>1252</b>	<b>58</b>	<b>905</b>	<b>42</b>	<b>2157</b>	<b>0.43</b>	<b>4.96</b>

**Table 02 :** Showing Sex-wise rate of TB Infection in Urban Population at Tuberculosis Unit (TU) District Tuberculosis Centre Meerut during 2005-2007

Year	Male TBP		Female TBP		Total TBP		Total Population (in lacs)
	No.	%	No.	%	No.	%	
2005	1089	53.1	948	46.9	2037	0.22	8.95
2006	1237	53.0	1076	47.0	2313	0.26	8.95
2007	1364	54.0	1153	46.0	2517	0.28	8.95
<b>Total</b>	<b>3690</b>	<b>53.7</b>	<b>3177</b>	<b>46.3</b>	<b>6867</b>	<b>0.77</b>	<b>8.95</b>

### Diagnosis of Tuberculosis

TB affects the lung in more than 80% of cases. This form of disease is called pulmonary Tuberculosis. As TB spreads mainly by droplet infection, close contact of a sputum smear- positive pulmonary tuberculosis patient can get infected. Patient who have symptoms suggestive of TB usually visit those health facilities most convenient of them. These may belong to government or other sector health care providers. The most common symptom of pulmonary tuberculosis is persistent cough, usually with expectoration. About 2- 3% of new adult out patient in a General Health facility are expected to suffer from cough for 3 weeks or more. The medical practitioner should identify such TB suspects' .On an average, 10% of TB suspect or expected to have sputum smear positive pulmonary TB.

### Discussion

TB infection seemed to be selective to the male sex. A large number of workers have also described the percentage of infection to be more in male than female. Ghosh and Basu (1972) reported that out of total case in a rural tuberculosis center near Delhi two - third (67.9%) were males and one- third (32.1%) were female. Gautam (1980) also reported after analyzing 10 year data in tuberculosis demonstration and Training Centre, Agra, that the prevalence of Pulmonary Tuberculosis was more among males than in females. Ahmed (1981) has reported that about two -third (62.2%) of Pulmonary tuberculosis cases were males and rest about one -third (37.8%) were females. Chopra et al (1997) reported that the TB infection was higher in female, at B H E L, Hardwar. Arora and Babu (1997 ) described findings of National Sample Survey and reported that prevalence rate of TB was lower in female than in male, especially in the age group of > 35 year at Pondicherry. During 2005- 07, the studies showed that percentage of TB infection was considerable higher in male as compared to female in all three year. Males are 58% and females are 42% in rural population. In urban population, males are 53.7% and females are 46.3%. Similar findings have also been reported by Benjamin (1957), Mishra et al., (1995), Karak et al., ( 1996), Arora and Babu (1997), Chopra et al., online (1997), and Gupta et al., (1999)Dhuria et al (2008) studies 90 case of TB in the department of community medicine, Maulana Azad Medical College New Delhi. it was observed that 51 (56.7%) were male and 39 (43.3%) were females. A study conduct by Rawat et al.,(2008) at Himalayan Institute of medicine, Dehradun. Study comprises 138 patients in which male predominance was seen as compared to female.

### Conclusion

The percentage of infection of TB is more in male; probably reason behind this may be due to the variation in males and female ratio in the population. However, it may also be due to male are more exposed to the infected cases at their working site. Another reason may be higher percentage of male smoker.

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